CertusSoft Workshop on

Automation of radioanalytical chemistry

Workshop organized by CertusSoft. Ltd, UK, www.certussoft.com
Chairperson: Dr. Heinrich Ziegler, Heinrich.Ziegler@CertusSoft.com
Co-chair: Dr. Oleg B. Egorov, PNNL, USA; oleg.egorov@pnl.gov

Abstract: Broad range radioanalytical measurements are carried out in support of commercial nuclear applications, nuclear waste processing, environmental monitoring, cleanup and restoration of the contaminated sites, verification of nonproliferation treaties, and other national and global security applications. Wet radiochemical analysis techniques continue to be paramount importance in the analysis of beta and alpha emitting radionuclides that can be readily measured using gamma or mass spectroscopic techniques. In many cases radioanalytical methods require tedious and labor intensive sample preparation, separation, detection and data interpretation procedures. Often times baseline radioanalytical procedures are based on outdated and inefficient methodologies. Furthermore, manual techniques continue to be dominant in radioanalytical laboratories even in the cases where the benefits of automation are obvious.

Comprehensive laboratory automation is becoming a main stream in clinical and bioanalytical laboratories. Recent advancements in separation materials, analytical instrumentation, automated fluid handling techniques, laboratory robotics, and computer hardware and software provide a solid foundation for the development of automated radioanalytical techniques. And yet, radiochemists continue to be confronted with the statements “This can not be automated…”.

The purpose of this workshop is to provide an insight into the possibilities of automation for various tasks performed in radiochemical laboratories. Representatives of CertusSoft, dedicated to providing custom automation solutions, and scientists from national laboratories will discuss:

1) automation of separation techniques with robots;
2) automation of separation techniques with HPLC;
3) automated radionuclide analyzers and water monitoring sensors;
4) automation of data processing and evaluation;
5) extending third party solutions to improve efficiency and user friendliness;
6) capturing and making available knowledge and techniques of experienced scientists using computer-based knowledge bases (semi-intelligent databases);

CertusSoft Ltd. has been founded to deliver custom made automation solutions where others have failed or have not even tried. The company philosophy is “*Our customer’s increased success in business is our success”*. Dr. Ziegler, radiochemist and professional software developer / software architect, will share his automation experience. Part of this experience he gained working five years for the laboratories of the IAEA (Vienna) and ITU (Karlsruhe). Working four years in the pharmaceutical industry provided an insight into high throughput automation, professional database design and professionalism in software development / architecture in a highly demanding industry.

Dr, Egorov, a Senior Research Scientist at the Pacific Northwest National Laboratory will share results of the decade long research on automated radionuclide analysis and sensing at the US DOE Hanford site.